Author Index to Volume 152

Abramson, E., see P. Dupré 152 (1991) 293
Adam, A.G., Y. Azuma, H. Li, A.J. Merer and C. Thambir, Anomalous structure in the $A^6\Sigma^+$–$X^6\Sigma^+$ transition of MnO caused by interference between two internal hyperfine perturbations 152 (1991) 391
Adelman, S.A., see F. Patron 152 (1991) 121
Azuma, Y., see A.G. Adam 152 (1991) 391

Barbara, P.F., see W. Jarzeba 152 (1991) 57
Benjamin, I., L.L. Lee, Y.S. Li, A. Liu and K.R. Wilson, Generalized Langevin model for molecular dynamics of an activated reaction in solution 152 (1991) 1
Bley, U., P.B. Davies, M. Grantz, T.J. Sears and F. Temps, FIR LMR spectra of FO_2: some classic examples of level anticrossing resonances 152 (1991) 281
Burlatsky, S.F., G.S. Oshanin and A.A. Ovchinnikov, Kinetics of chemical short-range ordering in liquids and diffusion-controlled reactions 152 (1991) 13
Burshtein, A.I. and A.A. Zharikov, The probability of non-adiabatic electron transfer as a function of friction 152 (1991) 23

Cameron, I.G., see W.T. Sobol 152 (1991) 337
Charutz, D.M. and R.D. Levine, An exact theory of friction for reactive collisions in a solvent using an interaction representation 152 (1991) 31
Clough, S., A.J. Horsewill, M.R. Johnson, M.A. Mohammed and T. Newton, Symmetry breaking in thermally activated NH_4 rotation studied by NMR level crossing spectroscopy 152 (1991) 343

Davies, P.B., see U. Bley 152 (1991) 281
Dupré, P., R. Jost, M. Lombardi, P.G. Green, E. Abramson and R.W. Field, Anomalous behavior of the anticrossing density as a function of excitation energy in the C_2H_2 molecule 152 (1991) 293

Field, R.W., see P. Dupré 152 (1991) 293
Frank, U.E. and W. Hüttner, The diagmagnetic properties of the $\cdot NF_2$ radical by magic doublet rotational Zeeman spectroscopy 152 (1991) 261
Friedman, H.L., see Y. Zhou 152 (1991) 185
Friedman, H.L., see F.O. Raineri 152 (1991) 201

Gehrke, Ch., R. Mohrschladt, J. Schroeder, J. Troe and P. Vöhringer, Photoisomerization dynamics of diphenylbutadiene in compressed liquid alkanes and in solid environment 152 (1991) 45
Glasbeek, M., see E. van Oort 152 (1991) 365
Glenewinkel-Meyer, Th., Ch. Ottinger, P. Rosmus and H.-J. Werner, MRCI potential energy functions for the charge transfer reactions $H^+ + HCl\ (X^1\Sigma^+) \rightarrow H + HCl^+\ (X^2\Pi_i, A^2\Sigma^+)$ 152 (1991) 409
Gochev, A., see G.E. McManis 152 (1991) 107

Author Index to Volume 152

Abramson, E., see P. Dupré 152 (1991) 293
Adam, A.G., Y. Azuma, H. Li, A.J. Merer and C. Thambir, Anomalous structure in the $A^6\Sigma^+$–$X^6\Sigma^+$ transition of MnO caused by interference between two internal hyperfine perturbations 152 (1991) 391
Adelman, S.A., see F. Patron 152 (1991) 121
Azuma, Y., see A.G. Adam 152 (1991) 391

Barbara, P.F., see W. Jarzeba 152 (1991) 57
Benjamin, I., L.L. Lee, Y.S. Li, A. Liu and K.R. Wilson, Generalized Langevin model for molecular dynamics of an activated reaction in solution 152 (1991) 1
Bley, U., P.B. Davies, M. Grantz, T.J. Sears and F. Temps, FIR LMR spectra of FO_2: some classic examples of level anticrossing resonances 152 (1991) 281
Burlatsky, S.F., G.S. Oshanin and A.A. Ovchinnikov, Kinetics of chemical short-range ordering in liquids and diffusion-controlled reactions 152 (1991) 13
Burshtein, A.I. and A.A. Zharikov, The probability of non-adiabatic electron transfer as a function of friction 152 (1991) 23

Cameron, I.G., see W.T. Sobol 152 (1991) 337
Charutz, D.M. and R.D. Levine, An exact theory of friction for reactive collisions in a solvent using an interaction representation 152 (1991) 31
Clough, S., A.J. Horsewill, M.R. Johnson, M.A. Mohammed and T. Newton, Symmetry breaking in thermally activated NH_4 rotation studied by NMR level crossing spectroscopy 152 (1991) 343

Davies, P.B., see U. Bley 152 (1991) 281
Dupré, P., R. Jost, M. Lombardi, P.G. Green, E. Abramson and R.W. Field, Anomalous behavior of the anticrossing density as a function of excitation energy in the C_2H_2 molecule 152 (1991) 293

Field, R.W., see P. Dupré 152 (1991) 293
Frank, U.E. and W. Hüttner, The diagmagnetic properties of the $\cdot NF_2$ radical by magic doublet rotational Zeeman spectroscopy 152 (1991) 261
Friedman, H.L., see Y. Zhou 152 (1991) 185
Friedman, H.L., see F.O. Raineri 152 (1991) 201

Gehrke, Ch., R. Mohrschladt, J. Schroeder, J. Troe and P. Vöhringer, Photoisomerization dynamics of diphenylbutadiene in compressed liquid alkanes and in solid environment 152 (1991) 45
Glasbeek, M., see E. van Oort 152 (1991) 365
Glenewinkel-Meyer, Th., Ch. Ottinger, P. Rosmus and H.-J. Werner, MRCI potential energy functions for the charge transfer reactions $H^+ + HCl\ (X^1\Sigma^+) \rightarrow H + HCl^+\ (X^2\Pi_i, A^2\Sigma^+)$ 152 (1991) 409
Gochev, A., see G.E. McManis 152 (1991) 107

Grantz, M., see U. Bley 152 (1991) 281
Green, P.G., see P. Dupré 152 (1991) 293

Horsewill, A.J., see S. Clough 152 (1991) 343
Hüttner, W., see U.E. Frank 152 (1991) 261
Hynes, J.T., see G. van der Zwan 152 (1991) 169

Jarzeba, W., G.C. Walker, A.E. Johnson and P.F. Barbara, Nonexponential solvation dynamics of simple liquids and mixtures 152 (1991) 57
Johnson, A.E., see W. Jarzeba 152 (1991) 57
Johnson, M.R., see S. Clough 152 (1991) 343
Johr, T., see H. Knöckel 152 (1991) 399
Joly, A.G. and K.A. Nelson, Metal carbonyl photochemistry in organic solvents: femtosecond transient absorption and preliminary resonance Raman spectroscopy 152 (1991) 69
Jost, R., see P. Dupré 152 (1991) 293

Kapinus, E.I., Friction effect on the mechanism of photochemical redox processes in solutions 152 (1991) 83
Kivelson, D., see G. Tarjus 152 (1991) 153
Knöckel, H., T. Johr, H. Richter and E. Tiemann, The influence of the spin–orbit and the hyperfine interaction on the asymptotic behaviour of the $A^1\Sigma_u^+$ state of Na_2 152 (1991) 399
Kreitzman, S.R., Electron relaxation dynamics of Mu ALCR spectra 152 (1991) 353

Lee, J., see S.-B. Zhu 152 (1991) 221
Lee, L.L., see I. Benjamin 152 (1991) 1
Levine, R.D., see D.M. Charutz 152 (1991) 31
Li, H., see A.G. Adam 152 (1991) 391
Li, Y.S., see I. Benjamin 152 (1991) 1
Liu, A., see I. Benjamin 152 (1991) 1
Lombardi, M., see P. Dupré 152 (1991) 293

MacPhail, R.A. and F.C. Monroe, Frequency-dependent solvent friction and torsional damping in liquid 1,2-difluoroethane 152 (1991) 93
McManis, G.E., A. Gochev and M.J. Weaver, Solvent dynamical effects in electron transfer: the solvent inertial limit and the predicted influence of quantum effects 152 (1991) 107
Meerts, W.L. and I. Ozier, Avoided-crossing molecular-beam study of the torsion–rotation energy levels of CH_3CF_3 152 (1991) 241
Merer, A.J., see A.G. Adam 152 (1991) 391
Mohammed, M.A., see S. Clough 152 (1991) 343
Mohrschladt, R., see Ch. Gehrke 152 (1991) 45
Monroe, F.C., see R.A. MacPhail 152 (1991) 93

Nelson, K.A., see A.G. Joly 152 (1991) 69
Newton, T., see S. Clough 152 (1991) 343

Ochi, N. and S. Tsuchiya, Rovibronic level structure of electronically excited acetylene ($\tilde{A}^1A_u$) in a supersonic jet as studied by laser-induced fluorescence and Zeeman quantum beat spectroscopy 152 (1991) 319

Oshanin, G.S., see S.F. Burlatsky 152 (1991) 13
Ottinger, Ch., see Th. Glenewinkel-Meyer 152 (1991) 409
Ovchinnikov, A.A., see S.F. Burlatsky 152 (1991) 13
Ozier, I., see W.L. Meerts 152 (1991) 241

Patron, F. and S.A. Adelman, Solvent cage effects and chemical dynamics in liquids 152 (1991) 121
Pintar, M.M., see W.T. Sobol 152 (1991) 337
Pliva, J., see E. Riedle 152 (1991) 375

Raineri, F.O., Y. Zhou, H.L. Friedman and G. Stell, Ion solvation dynamics in an interaction-site model solvent 152 (1991) 201
Richter, H., see H. Knöckel 152 (1991) 399
Riedle, E. and J. Pliva, Mixing of the vibrational angular momentum components of multiply degenerate vibronic states of benzene by vibrational *l*-type resonance 152 (1991) 375
Robinson, G.W., see S.-B. Zhu 152 (1991) 221
Rosmus, P., see Th. Glenewinkel-Meyer 152 (1991) 409

Schroeder, J., see Ch. Gehrke 152 (1991) 45
Sears, T.J., see U. Bley 152 (1991) 281
Shushin, A.I., Net CIDNP in geminate radical pair recombination in viscous liquids. Comparison of theory and experiment for high magnetic fields 152 (1991) 133
Simon, J.D. and S.-G. Su, Picosecond Stokes shift studies of solvent friction: experimental measurements of time-dependent band shape and integrated intensity 152 (1991) 143
Singh, S., see S.-B. Zhu 152 (1991) 221
Sobol, W.T., I.G. Cameron and M.M. Pintar, A Zeeman level crossing study of the symmetry of the potential hindering the torsional oscillator CH_3 152 (1991) 337
Someya, K., see K. Tanaka 152 (1991) 229
Stell, G., see Y. Zhou 152 (1991) 185
Stell, G., see F.O. Raineri 152 (1991) 201
Su, S.-G., see J.D. Simon 152 (1991) 143

Tanaka, K., K. Someya and T. Tanaka, Observation of level crossing and level anticrossing signals in the CO_2 laser Stark spectrum of POF_3 and their proposed application to electric field standards in laser Stark spectroscopy 152 (1991) 229
Tanaka, T., see K. Tanaka 152 (1991) 229
Tarjus, G. and D. Kivelson, Solvent effect on activated rate processes: on the validity of the GLE approach 152 (1991) 153
Temps, F., see U. Bley 152 (1991) 281
Thambir, C., see A.G. Adam 152 (1991) 391
Tiemann, E., see H. Knöckel 152 (1991) 399
Troe, J., see Ch. Gehrke 152 (1991) 45
Tsuchiya, S., see N. Ochi 152 (1991) 319

Van der Zwan, G. and J.T. Hynes, Chemical reaction rates and solvation dynamics in electrolyte solutions: ion atmosphere friction 152 (1991) 169
Van Oort, E. and M. Glasbeek, Fluorescence detected level-anticrossing and spin coherence of a localized triplet state in diamond 152 (1991) 365

Vöhringer, P., see Ch. Gehrke 152 (1991) 45

Walker, G.C., see W. Jarzeba 152 (1991) 57
Weaver, M.J., see G.E. McManis 152 (1991) 107
Werner, H.-J., see Th. Glenewinkel-Meyer 152 (1991) 409
Wilson, K.R., see I. Benjamin 152 (1991) 1

Zharikov, A.A., see A.I. Burshtein 152 (1991) 23
Zhou, Y., H.L. Friedman and G. Stell, Outer-sphere electron-transfer reactions in model molecular solvents: the mean spherical approximation 152 (1991) 185
Zhou, Y., see F.O. Raineri 152 (1991) 201
Zhu, S.-B., S. Singh, J. Lee and G.W. Robinson, Velocity dependence of friction 152 (1991) 221

List of Subjects

1 Methods

1.1 Theoretical

1.1.1 Group theory and algebras
1.1.2 Classical mechanics *
1.1.3 Quantized field theory
1.1.4 Many body and quasiparticle approaches *
1.1.5 Coupling schemes and perturbative treatments *
1.1.6 Relativistic quantum mechanics
1.1.7 Transport quantum mechanics *
1.1.8 Equilibrium statistical mechanics
1.1.9 Statistical mechanics of stationary states *
1.1.10 Non-equilibrium thermodynamic and hydrodynamic theories *
1.1.11 Ab initio schemes for stationary properties *
1.1.12 Computational and simulation methods *
1.1.13 Molecular dynamics and scattering theory *

1.2 Experimental

1.2.1 Magnetic resonances *
1.2.2 Cyclotron resonance
1.2.3 Microwave spectroscopy *
1.2.4 Infrared spectroscopy *
1.2.5 Raman spectroscopy *
1.2.6 Visible and UV spectroscopy *
1.2.7 Fluorescence spectroscopy *
1.2.8 Photoelectron and Auger spectroscopy
1.2.9 X-ray spectroscopy
1.2.10 Electron impact spectroscopy
1.2.11 Laser methods *
1.2.12 Picosecond spectroscopy *
1.2.13 Non-linear optical spectroscopy *
1.2.14 Synchrotron spectroscopies
1.2.15 Coherent optical spectroscopy *
1.2.16 Optical pumping
1.2.17 Multiple resonance spectroscopy *
1.2.18 Optoacoustic spectroscopy
1.2.19 Atomic and molecular beam techniques *
1.2.20 Time-resolved experiments *
1.2.21 Mass spectrometry
1.2.22 Radiolysis
1.2.23 Mössbauer spectroscopy
1.2.24 X-ray, electron and neutron diffraction
1.2.25 Neutron scattering
1.2.26 Light scattering
1.2.27 Field emission and field ionization
1.2.28 Measurement of macroscopic variables

2 Objects

2.1 Bulk systems

2.1.1 Gases *
2.1.2 Supersonic beams *
2.1.3 Liquids neat *
2.1.4 Liquid mixtures and solutions *
2.1.5 Crystals *
2.1.5.1 neat *
2.1.5.2 mixed
2.1.6 Glasses
2.1.7 Liquid crystals
2.1.8 Polymers
2.1.9 Semiconductors
2.1.10 Metals and alloys
2.1.11 Thin films
2.1.12 Surfaces
2.1.13 Low-dimensional materials
2.1.14 Dielectrics *
2.1.15 Plasmas
2.1.16 Biological systems

2.2 Microscopic systems

2.2.1 Atoms
2.2.2 Molecules (neutral and ionic) *
2.2.2.1 diatomic *
2.2.2.2 small polyatomics *
2.2.2.3 aromatics *
2.2.2.4 other large *
2.2.2.5 polymeric and biological
2.2.3 Molecular aggregates
2.2.3.1 dimers
2.2.3.2 van der Waals molecules
2.2.3.3 clusters
2.2.3.4 complexes
2.2.4 Free radicals (including hydronium and muonium) *
2.2.5 Quasiparticles (including excitons)
2.2.6 Defects and impurities *
2.2.7 Ions and charge carriers *

* Denotes subjects covered in this volume

3 Phenomena

3.1 Molecular structure *
3.2 Vibrations and rotations of molecules *
3.3 Electronic structure and states *
3.4 Electric and magnetic properties *
3.5 Spin splittings *
3.6 Optical activity
3.7 Molecular interactions *
3.8 Spectral bandshapes and intensities *
3.9 Coupling of electronic and nuclear motion *
3.10 Energy transfer processes
3.11 Molecular photophysical processes *
3.12 Intramolecular dynamics *
3.12.1 radiationless transitions
3.12.2 vibrational energy redistribution (including vibrational dissociation) *
3.13 Luminescence spectra, yields and lifetimes *
3.14 Coherence loss processes *
3.15 Non-linear responses (including optical)
3.16 Multiphoton phenomena
3.17 Reactions (including dissociation) *
3.17.1 gas phase *
3.17.2 condensed phase *
3.17.3 photochemical *
3.18 Tunnelling *
3.19 Electron transfer *
3.20 Positron annihilation
3.21 Ionization (including Rydberg states)
3.22 Molecular motion (including diffusive) *
3.23 Isotopic effects
3.24 Fluctuations and noise
3.25 Collective motion and excitations *
3.26 Surface effects and catalysis
3.27 Thermodynamic and transport properties
3.28 Structure of solids and liquids
3.29 Critical phenomena
3.30 Phase transitions

Subject Index to Volume 152

Methods

Theoretical

Classical mechanics

An exact theory of friction for reactive collisions in a solvent using an interaction representation, D.M. Charutz and R.D. Levine 152 (1991) 31

Many body and quasiparticle approaches

Symmetry breaking in thermally activated NH_4 rotation studied by NMR level crossing spectroscopy, S. Clough, A.J. Horsewill, M.R. Johnson, M.A. Mohammed and T. Newton 152 (1991) 343

Coupling schemes and perturbative treatments

The diagmagnetic properties of the $\cdot NF_2$ radical by magic doublet rotational Zeeman spectroscopy, U.E. Frank and W. Hüttner 152 (1991) 261
Electron relaxation dynamics of Mu ALCR spectra, S.R. Kreitzman 152 (1991) 353

Transport quantum mechanics

Symmetry breaking in thermally activated NH_4 rotation studied by NMR level crossing spectroscopy, S. Clough, A.J. Horsewill, M.R. Johnson, M.A. Mohammed and T. Newton 152 (1991) 343

Statistical mechanics of stationary states

Velocity dependence of friction, S.-B. Zhu, S. Singh, J. Lee and G.W. Robinson 152 (1991) 221

Non-equilibrium thermodynamic and hydrodynamic theories

Generalized Langevin model for molecular dynamics of an activated reaction in solution, I. Benjamin, L.L. Lee, Y.S. Li, A. Liu and K.R. Wilson 152 (1991) 1
The probability of non-adiabatic electron transfer as a function of friction, A.I. Burshtein and A.A. Zharikov 152 (1991) 23
Solvent effect on activated rate processes: on the validity of the GLE approach, G. Tarjus and D. Kivelson 152 (1991) 153
Chemical reaction rates and solvation dynamics in electrolyte solutions: ion atmosphere friction, G. van der Zwan and J.T. Hynes 152 (1991) 169
Outer-sphere electron-transfer reactions in model molecular solvents: the mean spherical approximation, Y. Zhou, H.L. Friedman and G. Stell 152 (1991) 185
Ion solvation dynamics in an interaction-site model solvent, F.O. Raineri, Y. Zhou, H.L. Friedman and G. Stell 152 (1991) 201

Ab initio schemes for stationary properties

MRCI potential energy functions for the charge transfer reactions $H^+ + HCl$ $(X^1\Sigma^+) \rightarrow H + HCl^+$ $(X^2\Pi_i, A^2\Sigma^+)$, Th. Glenewinkel-Meyer, Ch. Ottinger, P. Rosmus and H.-J. Werner 152 (1991) 409

Computational and simulation methods

Generalized Langevin model for molecular dynamics of an activated reaction in solution, I. Benjamin, L.L. Lee, Y.S. Li, A. Liu and K.R. Wilson 152 (1991) 1

An exact theory of friction for reactive collisions in a solvent using an interaction representation, D.M. Charutz and R.D. Levine 152 (1991) 31

Solvent cage effects and chemical dynamics in liquids, F. Patron and S.A. Adelman 152 (1991) 121

Molecular dynamics and scattering theory

An exact theory of friction for reactive collisions in a solvent using an interaction representation, D.M. Charutz and R.D. Levine 152 (1991) 31

Solvent dynamical effects in electron transfer: the solvent inertial limit and the predicted influence of quantum effects, G.E. McManis, A. Gochev and M.J. Weaver 152 (1991) 107

Net CIDNP in geminate radical pair recombination in viscous liquids. Comparison of theory and experiment for high magnetic fields, A.I. Shushin 152 (1991) 133

Velocity dependence of friction, S.-B. Zhu, S. Singh, J. Lee and G.W. Robinson 152 (1991) 221

Symmetry breaking in thermally activated NH_4 rotation studied by NMR level crossing spectroscopy, S. Clough, A.J. Horsewill, M.R. Johnson, M.A. Mohammed and T. Newton 152 (1991) 343

Experimental

Magnetic resonances

Net CIDNP in geminate radical pair recombination in viscous liquids. Comparison of theory and experiment for high magnetic fields, A.I. Shushin 152 (1991) 133

FIR LMR spectra of FO_2: some classic examples of level anticrossing resonances, U. Bley, P.B. Davies, M. Grantz, T.J. Sears and F. Temps 152 (1991) 281

A Zeeman level crossing study of the symmetry of the potential hindering the torsional oscillator CH_3, W.T. Sobol, I.G. Cameron and M.M. Pintar 152 (1991) 337

Symmetry breaking in thermally activated NH_4 rotation studied by NMR level crossing spectroscopy, S. Clough, A.J. Horsewill, M.R. Johnson, M.A. Mohammed and T. Newton 152 (1991) 343

Electron relaxation dynamics of Mu ALCR spectra, S.R. Kreitzman 152 (1991) 353

Fluorescence detected level-anticrossing and spin coherence of a localized triplet state in diamond, E. van Oort and M. Glasbeek 152 (1991) 365

Microwave spectroscopy

Observation of level crossing and level anticrossing signals in the CO_2 laser Stark spectrum of POF_3 and their proposed application to electric field standards in laser Stark spectroscopy, K. Tanaka, K. Someya and T. Tanaka 152 (1991) 229

The diagmagnetic properties of the $\cdot NF_2$ radical by magic doublet rotational Zeeman spectroscopy, U.E. Frank and W. Hüttner 152 (1991) 261

Infrared spectroscopy

FIR LMR spectra of FO_2: some classic examples of level anticrossing resonances, U. Bley, P.B. Davies, M. Grantz, T.J. Sears and F. Temps 152 (1991) 281

Raman spectroscopy

Frequency-dependent solvent friction and torsional damping in liquid 1,2-difluoroethane, R.A. MacPhail and F.C. Monroe 152 (1991) 93

Visible and UV spectroscopy

Picosecond Stokes shift studies of solvent friction: experimental measurements of time-dependent band shape and integrated intensity, J.D. Simon and S.-G. Su 152 (1991) 143

Anomalous behavior of the anticrossing density as a function of excitation energy in the C_2H_2 molecule, P. Dupré, R. Jost, M. Lombardi, P.G. Green, E. Abramson and R.W. Field 152 (1991) 293

Rovibronic level structure of electronically excited acetylene ($\tilde{A}\,^1A_u$) in a supersonic jet as studied by laser-induced fluorescence and Zeeman quantum beat spectroscopy, N. Ochi and S. Tsuchiya 152 (1991) 319

Mixing of the vibrational angular momentum components of multiply degenerate vibronic states of benzene by vibrational *l*-type resonance, E. Riedle and J. Pliva 152 (1991) 375

The influence of the spin–orbit and the hyperfine interaction on the asymptotic behaviour of the $A\,^1\Sigma_u^+$ state of Na_2, H. Knöckel, T. Johr, H. Richter and E. Tiemann 152 (1991) 399

Fluorescence spectroscopy

Photoisomerization dynamics of diphenylbutadiene in compressed liquid alkanes and in solid environment, Ch. Gehrke, R. Mohrschladt, J. Schroeder, J. Troe and P. Vöhringer 152 (1991) 45

Friction effect on the mechanism of photochemical redox processes in solutions, E.I. Kapinus 152 (1991) 83

Picosecond Stokes shift studies of solvent friction: experimental measurements of time-dependent band shape and integrated intensity, J.D. Simon and S.-G. Su 152 (1991) 143

Fluorescence detected level-anticrossing and spin coherence of a localized triplet state in diamond, E. van Oort and M. Glasbeek 152 (1991) 365

Laser methods

Observation of level crossing and level anticrossing signals in the CO_2 laser Stark spectrum of POF_3 and their proposed application to electric field standards in laser Stark spectroscopy, K. Tanaka, K. Someya and T. Tanaka 152 (1991) 229

FIR LMR spectra of FO_2: some classic examples of level anticrossing resonances, U. Bley, P.B. Davies, M. Grantz, T.J. Sears and F. Temps 152 (1991) 281

Anomalous structure in the $A\,^6\Sigma^+$–$X\,^6\Sigma^+$ transition of MnO caused by interference between two internal hyperfine perturbations, A.G. Adam, Y. Azuma, H. Li, A.J. Merer and C. Thambir 152 (1991) 391

Picosecond spectroscopy

Photoisomerization dynamics of diphenylbutadiene in compressed liquid alkanes and in solid environment, Ch. Gehrke, R. Mohrschladt, J. Schroeder, J. Troe and P. Vöhringer 152 (1991) 45

Nonexponential solvation dynamics of simple liquids and mixtures, W. Jarzeba, G.C. Walker, A.E. Johnson and P.F. Barbara 152 (1991) 57

Metal carbonyl photochemistry in organic solvents: femtosecond transient absorption and preliminary resonance Raman spectroscopy, A.G. Joly and K.A. Nelson 152 (1991) 69

Non-linear optical spectroscopy
Anomalous structure in the $A^6\Sigma^+$–$X^6\Sigma^+$ transition of MnO caused by interference between two internal hyperfine perturbations, A.G. Adam, Y. Azuma, H. Li, A.J. Merer and C. Thambir 152 (1991) 391

Coherent optical spectroscopy
Rovibronic level structure of electronically excited acetylene ($\tilde{A}\,^1A_u$) in a supersonic jet as studied by laser-induced fluorescence and Zeeman quantum beat spectroscopy, N. Ochi and S. Tsuchiya 152 (1991) 319

Multiple resonance spectroscopy
Observation of level crossing and level anticrossing signals in the CO_2 laser Stark spectrum of POF_3 and their proposed application to electric field standards in laser Stark spectroscopy, K. Tanaka, K. Someya and T. Tanaka 152 (1991) 229
A Zeeman level crossing study of the symmetry of the potential hindering the torsional oscillator CH_3, W.T. Sobol, I.G. Cameron and M.M. Pintar 152 (1991) 337

Atomic and molecular beam techniques
Avoided-crossing molecular-beam study of the torsion–rotation energy levels of CH_3CF_3, W.L. Meerts and I. Ozier 152 (1991) 241
The influence of the spin–orbit and the hyperfine interaction on the asymptotic behaviour of the $A\,^1\Sigma_u^+$ state of Na_2, H. Knöckel, T. Johr, H. Richter and E. Tiemann 152 (1991) 399

Time-resolved experiments
Metal carbonyl photochemistry in organic solvents: femtosecond transient absorption and preliminary resonance Raman spectroscopy, A.G. Joly and K.A. Nelson 152 (1991) 69
Friction effect on the mechanism of photochemical redox processes in solutions, E.I. Kapinus 152 (1991) 83
Fluorescence detected level-anticrossing and spin coherence of a localized triplet state in diamond, E. van Oort and M. Glasbeek 152 (1991) 365

Objects

Bulk systems

Gases
The influence of the spin–orbit and the hyperfine interaction on the asymptotic behaviour of the $A\,^1\Sigma_u^+$ state of Na_2, H. Knöckel, T. Johr, H. Richter and E. Tiemann 152 (1991) 399

Supersonic beams
Rovibronic level structure of electronically excited acetylene ($\tilde{A}\,^1A_u$) in a supersonic jet as studied by laser-induced fluorescence and Zeeman quantum beat spectroscopy, N. Ochi and S. Tsuchiya 152 (1991) 319

Liquids neat
Frequency-dependent solvent friction and torsional damping in liquid 1,2-difluoroethane, R.A. MacPhail and F.C. Monroe 152 (1991) 93
Ion solvation dynamics in an interaction-site model solvent, F.O. Raineri, Y. Zhou, H.L. Friedman and G. Stell 152 (1991) 201

Liquid mixtures and solutions
An exact theory of friction for reactive collisions in a solvent using an interaction representation, D.M. Charutz and R.D. Levine 152 (1991) 31
Nonexponential solvation dynamics of simple liquids and mixtures, W. Jarzeba, G.C. Walker, A.E. Johnson and P.F. Barbara 152 (1991) 57
Metal carbonyl photochemistry in organic solvents: femtosecond transient absorption and preliminary resonance Raman spectroscopy, A.G. Joly and K.A. Nelson 152 (1991) 69
Friction effect on the mechanism of photochemical redox processes in solutions, E.I. Kapinus 152 (1991) 83
Frequency-dependent solvent friction and torsional damping in liquid 1,2-difluoroethane, R.A. MacPhail and F.C. Monroe 152 (1991) 93
Solvent cage effects and chemical dynamics in liquids, F. Patron and S.A. Adelman 152 (1991) 121
Solvent effect on activated rate processes: on the validity of the GLE approach, G. Tarjus and D. Kivelson 152 (1991) 153
Chemical reaction rates and solvation dynamics in electrolyte solutions: ion atmosphere friction, G. van der Zwan and J.T. Hynes 152 (1991) 169
Outer-sphere electron-transfer reactions in model molecular solvents: the mean spherical approximation, Y. Zhou, H.L. Friedman and G. Stell 152 (1991) 185
Velocity dependence of friction, S.-B. Zhu, S. Singh, J. Lee and G.W. Robinson 152 (1991) 221

Crystals
A Zeeman level crossing study of the symmetry of the potential hindering the torsional oscillator CH_3, W.T. Sobol, I.G. Cameron and M.M. Pintar 152 (1991) 337

–neat
A Zeeman level crossing study of the symmetry of the potential hindering the torsional oscillator CH_3, W.T. Sobol, I.G. Cameron and M.M. Pintar 152 (1991) 337

Dielectrics
Ion solvation dynamics in an interaction-site model solvent, F.O. Raineri, Y. Zhou, H.L. Friedman and G. Stell 152 (1991) 201

Microscopic systems

Molecules (neutral and ionic)
Outer-sphere electron-transfer reactions in model molecular solvents: the mean spherical approximation, Y. Zhou, H.L. Friedman and G. Stell 152 (1991) 185
Observation of level crossing and level anticrossing signals in the CO_2 laser Stark spectrum of POF_3 and their proposed application to electric field standards in laser Stark spectroscopy, K. Tanaka, K. Someya and T. Tanaka 152 (1991) 229

–diatomic
Anomalous structure in the $A^6\Sigma^+$–$X^6\Sigma^+$ transition of MnO caused by interference between two internal hyperfine perturbations, A.G. Adam, Y. Azuma, H. Li, A.J. Merer and C. Thambir 152 (1991) 391
The influence of the spin–orbit and the hyperfine interaction on the asymptotic behaviour of the $A^1\Sigma_u^+$ state of Na_2, H. Knöckel, T. Johr, H. Richter and E. Tiemann 152 (1991) 399

–small polyatomics
Frequency-dependent solvent friction and torsional damping in liquid 1,2-difluoroethane, R.A. MacPhail and F.C. Monroe 152 (1991) 93
Avoided-crossing molecular-beam study of the torsion–rotation energy levels of CH_3CF_3, W.L. Meerts and I. Ozier 152 (1991) 241
FIR LMR spectra of FO_2: some classic examples of level anticrossing resonances, U. Bley, P.B. Davies, M. Grantz, T.J. Sears and F. Temps 152 (1991) 281
Anomalous behavior of the anticrossing density as a function of excitation energy in the C_2H_2 molecule, P. Dupré, R. Jost, M. Lombardi, P.G. Green, E. Abramson and R.W. Field 152 (1991) 293
Rovibronic level structure of electronically excited acetylene ($\tilde{A}\,^1A_u$) in a supersonic jet as studied by laser-induced fluorescence and Zeeman quantum beat spectroscopy, N. Ochi and S. Tsuchiya 152 (1991) 319
MRCI potential energy functions for the charge transfer reactions $H^+ + HCl$ ($X\,^1\Sigma^+$) $\rightarrow H + HCl^+$ ($X\,^2\Pi_i$, $A\,^2\Sigma^+$), Th. Glenewinkel-Meyer, Ch. Ottinger, P. Rosmus and H.-J. Werner 152 (1991) 409

–aromatics
Friction effect on the mechanism of photochemical redox processes in solutions, E.I. Kapinus 152 (1991) 83
Mixing of the vibrational angular momentum components of multiply degenerate vibronic states of benzene by vibrational *l*-type resonance, E. Riedle and J. Pliva 152 (1991) 375

–other large
Picosecond Stokes shift studies of solvent friction: experimental measurements of time-dependent band shape and integrated intensity, J.D. Simon and S.-G. Su 152 (1991) 143

Free radicals (including hydronium and muonium)
The diagmagnetic properties of the $\cdot NF_2$ radical by magic doublet rotational Zeeman spectroscopy, U.E. Frank and W. Hüttner 152 (1991) 261
Electron relaxation dynamics of Mu ALCR spectra, S.R. Kreitzman 152 (1991) 353

Defects and impurities
Fluorescence detected level-anticrossing and spin coherence of a localized triplet state in diamond, E. van Oort and M. Glasbeek 152 (1991) 365

Ions and charge carriers
The probability of non-adiabatic electron transfer as a function of friction, A.I. Burshtein and A.A. Zharikov 152 (1991) 23
Chemical reaction rates and solvation dynamics in electrolyte solutions: ion atmosphere friction, G. van der Zwan and J.T. Hynes 152 (1991) 169

Phenomena

Molecular structure
Avoided-crossing molecular-beam study of the torsion–rotation energy levels of CH_3CF_3, W.L. Meerts and I. Ozier 152 (1991) 241

Vibrations and rotations of molecules

Solvent cage effects and chemical dynamics in liquids, F. Patron and S.A. Adelman 152 (1991) 121

The diagmagnetic properties of the $\cdot NF_2$ radical by magic doublet rotational Zeeman spectroscopy, U.E. Frank and W. Hüttner 152 (1991) 261

FIR LMR spectra of FO_2: some classic examples of level anticrossing resonances, U. Bley, P.B. Davies, M. Grantz, T.J. Sears and F. Temps 152 (1991) 281

Mixing of the vibrational angular momentum components of multiply degenerate vibronic states of benzene by vibrational *l*-type resonance, E. Riedle and J. Pliva 152 (1991) 375

The influence of the spin–orbit and the hyperfine interaction on the asymptotic behaviour of the $A^1\Sigma_u^+$ state of Na_2, H. Knöckel, T. Johr, H. Richter and E. Tiemann 152 (1991) 399

Electronic structure and states

Picosecond Stokes shift studies of solvent friction: experimental measurements of time-dependent band shape and integrated intensity, J.D. Simon and S.-G. Su 152 (1991) 143

Observation of level crossing and level anticrossing signals in the CO_2 laser Stark spectrum of POF_3 and their proposed application to electric field standards in laser Stark spectroscopy, K. Tanaka, K. Someya and T. Tanaka 152 (1991) 229

Electric and magnetic properties

The diagmagnetic properties of the $\cdot NF_2$ radical by magic doublet rotational Zeeman spectroscopy, U.E. Frank and W. Hüttner 152 (1991) 261

Anomalous structure in the $A^6\Sigma^+$–$X^6\Sigma^+$ transition of MnO caused by interference between two internal hyperfine perturbations, A.G. Adam, Y. Azuma, H. Li, A.J. Merer and C. Thambir 152 (1991) 391

Spin splittings

Anomalous structure in the $A^6\Sigma^+$–$X^6\Sigma^+$ transition of MnO caused by interference between two internal hyperfine perturbations, A.G. Adam, Y. Azuma, H. Li, A.J. Merer and C. Thambir 152 (1991) 391

Molecular interactions

Nonexponential solvation dynamics of simple liquids and mixtures, W. Jarzeba, G.C. Walker, A.E. Johnson and P.F. Barbara 152 (1991) 57

Spectral bandshapes and intensities

Frequency-dependent solvent friction and torsional damping in liquid 1,2-difluoroethane, R.A. MacPhail and F.C. Monroe 152 (1991) 93

Coupling of electronic and nuclear motion

Picosecond Stokes shift studies of solvent friction: experimental measurements of time-dependent band shape and integrated intensity, J.D. Simon and S.-G. Su 152 (1991) 143

Molecular photophysical processes

Rovibronic level structure of electronically excited acetylene ($\tilde{A}^1A_u$) in a supersonic jet as studied by laser-induced fluorescence and Zeeman quantum beat spectroscopy, N. Ochi and S. Tsuchiya 152 (1991) 319

Intramolecular dynamics
Anomalous behavior of the anticrossing density as a function of excitation energy in the C_2H_2 molecule, P. Dupré, R. Jost, M. Lombardi, P.G. Green, E. Abramson and R.W. Field 152 (1991) 293

–vibrational energy redistribution (including vibrational dissociation)
Mixing of the vibrational angular momentum components of multiply degenerate vibronic states of benzene by vibrational *l*-type resonance, E. Riedle and J. Pliva 152 (1991) 375

Luminescence spectra, yields and lifetimes
Chemical reaction rates and solvation dynamics in electrolyte solutions: ion atmosphere friction, G. van der Zwan and J.T. Hynes 152 (1991) 169

Coherence loss processes
Fluorescence detected level-anticrossing and spin coherence of a localized triplet state in diamond, E. van Oort and M. Glasbeek 152 (1991) 365

Reactions (including dissociation)
Solvent effect on activated rate processes: on the validity of the GLE approach, G. Tarjus and D. Kivelson 152 (1991) 153

–gas phase
Generalized Langevin model for molecular dynamics of an activated reaction in solution, I. Benjamin, L.L. Lee, Y.S. Li, A. Liu and K.R. Wilson 152 (1991) 1

–condensed phase
Generalized Langevin model for molecular dynamics of an activated reaction in solution, I. Benjamin, L.L. Lee, Y.S. Li, A. Liu and K.R. Wilson 152 (1991) 1
An exact theory of friction for reactive collisions in a solvent using an interaction representation, D.M. Charutz and R.D. Levine 152 (1991) 31
Metal carbonyl photochemistry in organic solvents: femtosecond transient absorption and preliminary resonance Raman spectroscopy, A.G. Joly and K.A. Nelson 152 (1991) 69
Solvent cage effects and chemical dynamics in liquids, F. Patron and S.A. Adelman 152 (1991) 121
Solvent effect on activated rate processes: on the validity of the GLE approach, G. Tarjus and D. Kivelson 152 (1991) 153
Chemical reaction rates and solvation dynamics in electrolyte solutions: ion atmosphere friction, G. van der Zwan and J.T. Hynes 152 (1991) 169
Outer-sphere electron-transfer reactions in model molecular solvents: the mean spherical approximation, Y. Zhou, H.L. Friedman and G. Stell 152 (1991) 185
Velocity dependence of friction, S.-B. Zhu, S. Singh, J. Lee and G.W. Robinson 152 (1991) 221

–photochemical
Photoisomerization dynamics of diphenylbutadiene in compressed liquid alkanes and in solid environment, Ch. Gehrke, R. Mohrschladt, J. Schroeder, J. Troe and P. Vöhringer 152 (1991) 45
Metal carbonyl photochemistry in organic solvents: femtosecond transient absorption and preliminary resonance Raman spectroscopy, A.G. Joly and K.A. Nelson 152 (1991) 69

Tunnelling
Solvent dynamical effects in electron transfer: the solvent inertial limit and the predicted influence of quantum effects, G.E. McManis, A. Gochev and M.J. Weaver 152 (1991) 107
A Zeeman level crossing study of the symmetry of the potential hindering the torsional oscillator CH_3, W.T. Sobol, I.G. Cameron and M.M. Pintar 152 (1991) 337
Symmetry breaking in thermally activated NH_4 rotation studied by NMR level crossing spectroscopy, S. Clough, A.J. Horsewill, M.R. Johnson, M.A. Mohammed and T. Newton 152 (1991) 343

Electron transfer
The probability of non-adiabatic electron transfer as a function of friction, A.I. Burshtein and A.A. Zharikov 152 (1991) 23
Friction effect on the mechanism of photochemical redox processes in solutions, E.I. Kapinus 152 (1991) 83
Solvent dynamical effects in electron transfer: the solvent inertial limit and the predicted influence of quantum effects, G.E. McManis, A. Gochev and M.J. Weaver 152 (1991) 107
Outer-sphere electron-transfer reactions in model molecular solvents: the mean spherical approximation, Y. Zhou, H.L. Friedman and G. Stell 152 (1991) 185
MRCI potential energy functions for the charge transfer reactions $H^+ + HCl$ $(X^1\Sigma^+) \rightarrow H + HCl^+$ $(X^2\Pi_i, A^2\Sigma^+)$, Th. Glenewinkel-Meyer, Ch. Ottinger, P. Rosmus and H.-J. Werner 152 (1991) 409

Molecular motion (including diffusive)
Photoisomerization dynamics of diphenylbutadiene in compressed liquid alkanes and in solid environment, Ch. Gehrke, R. Mohrschladt, J. Schroeder, J. Troe and P. Vöhringer 152 (1991) 45
Nonexponential solvation dynamics of simple liquids and mixtures, W. Jarzeba, G.C. Walker, A.E. Johnson and P.F. Barbara 152 (1991) 57
Solvent cage effects and chemical dynamics in liquids, F. Patron and S.A. Adelman 152 (1991) 121
Ion solvation dynamics in an interaction-site model solvent, F.O. Raineri, Y. Zhou, H.L. Friedman and G. Stell 152 (1991) 201
Velocity dependence of friction, S.-B. Zhu, S. Singh, J. Lee and G.W. Robinson 152 (1991) 221

Collective motion and excitations
Nonexponential solvation dynamics of simple liquids and mixtures, W. Jarzeba, G.C. Walker, A.E. Johnson and P.F. Barbara 152 (1991) 57